Space Weather Forecast

Issued on Sunday 17 November 2024 at 00:20 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily Chance of Minor Radio Blackouts (R1). Slight Chance of Minor Geomagnetic Storms (G1) in first half of forecast period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been moderate during the past 24 hours, with a peak Moderate-class X-ray flare at 16/0137UTC from the largest sunspot region in the southwest.

There are currently four sunspot regions on the facing side. The largest remains in the southwest, however this showed a relatively open configuration and a reduction in the number of small spots, with an overall reduction in area and complexity. Other regions were magnetically unipolar and largely unchanged.

No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were perhaps indicative of the tail of influence from a fast wind but likely gave way to a slow regime during the UTC evening.

The solar wind speed was roughly level through the 24 hours at background levels. The number of particles was within typical background levels, but showed a step upwards around 16/2000UTC, which was perhaps a resumption of a slow regime when considered with a concurrent fall in the magnetic field. The north-south component showed a gradual drift from being mainly anti-aligned with Earth's field to become more neutral with time.

The net result of the above solar wind measures was greatest early in the period but below Minor Geomagentic Storm G1 throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a slightly higher chance of both Moderate- and Strong-class activity relative to the recent past, with the arrival of a succession of returning regions expected over the eastern solar horizon into the new UTC week.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

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The geomagnetic forecast therefore solely consists of an inbound coronal hole fast wind, mooted for later in the current UTC day. There is a corresponding slight chance of G1 Minor geomagnetic storm intervals resulting, with the risk waning before midweek UTC to quiet.

Energetic Particles / Solar Radiation: There is a daily slight chance of S1/Minor solar radiation storms as the most complex sunspot region nears the western solar horizon.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	40	40	40
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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